

97. *Missouri*—Lebanon, 54, 97; St. Louis, 60, 96; Corning, 58, 98; Frankford, 65, 99. *Kansas*—Fort Hays, 47, 102; Leavenworth, 58, 99; Baxter Springs, 70, 100; Fort Wallace, 61, 104. *Wisconsin*—Neillsville, 42, 91; Bloomfield, 53, 84; Manitowoc, 60, 94. *Iowa*—Nora Springs, 50, 94; Keokuk, 61, 97; Vail, 52, 95; Tabor, 56, 100. *Nebraska*—Camp Sheridan, 42, 99; Fort Hartsuff, 43, 100; North Platte, 54, 103; Fort McPherson, 50, 104. *Indian Territory*—Fort Sill, 51, 98; Fort Gibson, 58, 99. *Minnesota*—Duluth, 49, 92; St. Paul, 52, 94; Breckenridge, 41, 90. *Dakota*—Fort Pembina, 36, 89; Fort Rice, 43, 100. Yankton, 48, 97; Olivet, 45, 103. *Colorado*—Summit, 39, 72; Pike's Peak, 29, 62; Denver, 54, 105. *Wyoming*—Fort Sanders, 43, 86; Cheyenne, 45, 91; Fort Fred Steele, 49, 96; Fort Fetterman, 48, 103. *Utah*—Coalville, 51, 96; Salt Lake City, 60, 97. *Nevada*—Pioche, 54, 94; Winnemucca, 44, 100; Camp McDermit, 52, 102. *Arizona*—Yuma, 69, 114. *California*—Santa Cruz, 47, 73; Visalia, 49, 106; Sacramento, 53, 100; San Francisco, 52, 73; San Diego, 55, 80; Red Bluff, 57, 110. *Oregon*—Roseburg, 44, 88; Portland, 47, 87. *New Mexico*—Fort Union, 45, 89; Fort Wingate, 48, 92; Fort Craig, 60, 105; La Mesilla, 64, 107. *Idaho*—Boise City, 53, 98. *Montana*—Virginia City, 50, 90.

Ranges of Temperature.—The monthly ranges will appear, from examination of the minima and maxima temperatures just given. Greatest daily ranges vary in New England from 16° least on Mt. Washington to 25° at Boston; Middle Atlantic States, 19° at Cape May to 26° at Fort Whipple, Va.; South Atlantic States, 15° at Cape Hatteras to 28° at Augusta; East Gulf States, 16° at Key West to 23° at Jacksonville; West Gulf States, 17° at Galveston; Ohio valley and Tennessee, 21° at Cairo and Cincinnati to 29° at Pittsburgh; Lower Lake region, 22° at Sandusky to 28° at Rochester; Upper Lake region, 21° at Chicago to 28° at Marquette; Upper Mississippi valley, 21° at Davenport to 27° at Dubuque and St. Paul; Lower Missouri valley, 27° at Omaha to 39° at Yankton, and 42° at North Platte; Minnesota and Dakota, 37° Bismarck to 41° at Pembina; Colorado, 22° on Pike's Peak to 45° at Denver; Utah and Nevada, 32° at Salt Lake City and Pioche to 46° at Winnemucca; California, 17° at San Francisco and San Diego to 41° at Visalia; Oregon, 35° at Roseburg; Idaho, 38° at Boise City; Montana, 36° at Virginia City.

Frost occurred as follows: Pike's Peak, every day; Bismarck, Dak., 15th, 16th, hoar frost on bottom lands; Pembina, Dak., 25th; Grand Haven, Mich., 26th; Mt. Washington, 23rd and 26th; New London, Conn., 24th; Cresco, Iowa, 24th; Fall River, Mass., 23rd; Rowe, Mass., 5th; Grand Rapids, Mich., 26th; Kensico, N. Y., 24th, on low ground; Chambersburg, Pa., 26th; Lunenburg, Vt., 26th.

Ice is reported to have formed at Pike's Peak, on the 11th, $\frac{1}{2}$ inch.

PRECIPITATION.

On chart No. III is illustrated the general distribution of the rain-fall for the month. On the left side of the same chart is a table giving the average precipitation for August by districts, which shows a general deficiency over the interior, but a decided excess in the Atlantic States. The monthly records from several stations in the Gulf States are not yet to hand, but those received, except New Orleans, show a large excess.

Special Heavy Rains.—1st, Jersey City, N. J., 3.08; Flushing, N. Y., 3.65 in. in 3½ hours. 2nd, Albany, N. Y., 1.25 in. in 10 minutes. 3rd, Fort Barrancas, Fla., 3.75 in. 4th, Mendon, Mass., 5.90 in.; Colebrook, Conn., 6.67 in. in 6 hours. 6th, Newark, N. J., 3.04 in.; South Orange, N. J., 3.47 in.; Waltham, Mass., 2.50 in. in 90 minutes. 8th and 9th, Boston, 4.04 in.; Watertown, Mass., 3.30 in.; Contoocookville, N. H., 3.30 in. 10th, St. Louis, 2.57 in. in 88 minutes. 12th, Weldon, N. C., 12th, 13th, 4.83 in.; Portsmouth, N. C., 12th to 14th, 5.47 in.; Fort Barrancas, Fla., 12th, 13th, 3.15 in. 14th, Charleston, 13th, 14th, 7.81 in.; Fort Barrancas, Fla., 3.75 in. 16th, Fort Monroe, Va., 4.58 in.; Vineland, N. J., 16th, 17th, 5.40 in. 17th, Mt. Sterling, Ill., 4.00 in.; Mt. Desert, Me., 17th, 18th, 3.15 in. 18th, Wood's Holl, Mass., 5.11 in. 19th, Elmira, Ill., 3.29 in. in 1 hour and 55 minutes. 20th, Mt. Sterling, Ill., 2.50 in. 21st, Freehold, N. J., 2.65 in.; Savannah, Ga., 1.75 in. in 60 minutes; Springfield, Mo., 3.30 in. 27th, Dodge City, Kan., 2.01 in. in 73 minutes. 29th, Greene Spring, Ala., 29th, 30th, 3.10 in.; Mt. Solon, Va., 2.40 in. in 6½ hours; Fort Barrancas, Fla., 9.75 in. 30th, Cape Lookout, 2.05 in., in 1 hour; Spring Garden, Tenn., 4.70 in.

Largest Monthly Rain-falls.—At Fort Barrancas, Fla., 30.73 inches; Cape Lookout, N. C., 14.30 in.; Portsmouth, N. C., 11.76 in.; Mt. Washington, N. H., 11.35 in.; Gulf Hammock, Fla., 11.15 in.; Colebrook, Conn., 11.07 in.; Charleston, S. C., 10.73 in.; Auburn, N. H., 10.14 in.; Cape Hatteras, N. C., 10.07 in.; Norfolk, Va. and Mobile, Ala., 9.95 in.; Weldon, N. C., 9.15 in.; Washington, D. C., 8.89 in.; Mendon, Mass., 8.50 in.; Waltham, Mass., 8.40 in.; Vineland, N. J., 8.46 in.; Green Spring, Ala., 8.32 in.; Willett's Point, N. Y., 8.34 in.; Newark, N. J., 8.06 in.

Smallest Monthly Rain-falls.—At Fort San Jose, Alcatraz Island, San Francisco, Los Angeles, Sacramento, Visalia, Salinas City, Fresno and Healdsburg, Cal. and Fort Concho, Tex., none; San Diego, Red Bluff and Twin Oaks, Cal., trace; Campo, Cal., 0.01 in.; Santa Cruz, Cal., 0.02 in.; San Buenaventura, Cal., 0.03 in.; Coleman, Tex., 0.06 in.; Tarentum, Pa., 0.10 in.; Umatilla, Or., 0.15 in.; Concho, Tex., 0.23 in.; Pierce City, Mo., 0.30 in.; Olympia, Wash. Ty., 0.32 in.; Empire City, Kan., 0.35 in.; Corning, Mo., 0.40 in.; Roseburg, Or., 0.46 in.; Portland, Or., Boise City, Idaho and Winnemucca, Nev., 0.50 in.; La Mesilla, N. M., 0.61 in.

Floods.—9th., Black river at Watertown, N. Y., rose five feet, during rain-storm; bridges and buildings swept away along the river and small streams; highways and railroads in Jefferson Co., badly damaged; in eastern Massachusetts wash-outs occurred on several railroads. 10th., In northern New York, western and southern Vermont and western Massachusetts, all streams much swollen; tributaries of the Hudson,

Hoosic and Mohawk rivers, higher than since 1850: lakes Champlain, Schroon, George and Lucerne several feet above usual height; millions of dead fish found, supposed to be from the effects of Paris green washed from potato fields. Laredo, Tex., 21st, arroyos south of station much swollen and road bed washed away in many places; Rio Grand river unusually high for several days; heavy rains reported by traders from the interior of Mexico and small streams were much swollen. Davenport, Iowa, 19th, severe thunder-storm, flooding city and damaging crops. Charleston, S. C., 14th, heavy thunder-storm; streets flooded. Baltimore, Md., 16th, heavy rains; streets flooded. Philadelphia, 1st, 5:40 p. m., heavy thunder-storm; streets flooded. Albany, N. Y., 2nd, 11:43 to 11:53 a. m., severe thunder-storm; much damage by wind and water. South Pueblo, Cal., 24th, terrific flood SW. of station; great damage on the Greenhorn, Cucharas, Huerfano and Apache creeks; crops and houses washed away; two men drowned; also numbers of cattle. Mt. Solon, Va., 29th, heavy rain, damaging fences, washing cornfields badly. Beloit, Wis., 18th, heavy rain; damage to roads; washed away railroad culvert.

Drought.—Clear creek, Neb., 31st, has continued for three weeks, injuring corn and potatoes; no fall plowing done. Contoocookville, N. H., 15th, early potatoes injured by drought; wells and streams very low. Ephrata, Lancaster Co., Pa., 21st, many wells dry, great scarcity of water in some sections of the county. West Charlotte, Vt., 31st, drought has affected potato and apple crop severely; small fruits destroyed, except grapes. Corsicana, Tex., 31st, cotton cut short and stock ranges dried up by drought, cattle suffering for water. Creswell, Kan., 31st, ground very dry, everything suffering for rain. Coleman, Texas, 20th, no rain for a long time, ground very dry, grass in many places quite dead. Sloop Point, N. C., 2d, drought continues, crops in much danger, no rain since July 4th.

Hail.—Wadena, Minn., 3rd; Pike's Peak, 1st, 2nd, 17th; Burlington, Ia., 4th; Davenport, Ia., 4th, 13th; Port Huron, Mich., 5th; Detroit, Mich., 1st; Buffalo, N. Y., 9th; Cincinnati, O., 5th; Albany, N. Y., 2nd; Portland, Me., 18th; Newbury, Vt., 17th; Mt. Washington, 7th, 9th; Boston, 9th; Fort Rice, Dak., 7th; Summit Col., 2nd, 5th, 30th, 31st; Colebrook, Conn., 4th; Anna, Ill., 4th; Lyndon, Ill., 14th; St. Meinrad, Ind., 10th; Cresco, Ia., 27th; Nora Springs, Ia., 26th; near West Waterville, Me., 18th; near Wookstock, Md., 5th; Sandy Springs, Md., 1st; Springfield, Mass., 13th; Waltham, Mass., 4th, 9th; Cambridge, Mass., 9th; Watertown, Mass., 9th; Litchfield, Mich., 8th; Norfolk, Neb., 8th; Plattsmouth, Neb., 2nd; Auburn, N. H., 9th; Freehold, N. J., 4th; Palermo and North Volney, N. Y., 15th; Vernon Centre, N. Y., 9th; Tioga, Pa., 6th; Blooming Grove, Pa., 1st; Carlisle, Pa., 3rd; Greencastle, Pa., 17th; Clarks-ville, Tenn., 2nd; Lunenburg, Vt., 18th; Strafford, Vt., 7th, 17th; Ashland and Neillsville, Wis., 13th; Boise City, Idaho, 16th; Pioche, Nev., 16th; Cheyenne, 13th; Lead City, Dak., 2nd; Pembina, Dak., 6th, 26th; Fort Whipple, Va., 1st.

Rainy Days.—The number of days on which rain or snow has fallen varies as follows: New England, 8 to 20; Middle States, 7 to 20; South Atlantic States, 12 to 21; Gulf States, 11 to 22; Ohio valley and Tennessee, 9 to 18; Lower Lake region, 8 to 16; Upper Lake region, 8 to 14; Upper Mississippi valley, 11 to 13; Lower Missouri valley, 5 to 6; Northwest, 10 to 12; Rocky Mountains, 7 to 18; Western Plateau, 5 to 17; and Pacific coast, 0 to 4.

Cloudy Days.—For New England the number varies from 5 to 16; Middle States, 4 to 16; South Atlantic States, 6 to 14; Gulf States, 2 to 10; Ohio valley and Tennessee, 3 to 9; Lower Lake region, 3 to 15; Upper Lake region, 3 to 8; Upper Mississippi valley, 4 to 8; Lower Missouri valley, 2 to 7; Northwest, 3 to 5; Rocky Mountains, 3 to 8; Western Plateau, 2 to 8; and Pacific coast, 0 to 3.

Snow.—Summit, Col., 15th, snow fell on the surrounding summits and a trifle near the station.

Rain from a Cloudless Sky.—McKavett, Tex., 2:30 p. m., light rain for five minutes while not a cloud was visible in the zenith, but a small cumulo-stratus in the western horizon.

RELATIVE HUMIDITY.

The average percentage of relative humidity for the month ranges as follows: New England, 73 to 83; Middle Atlantic States, 70 to 83; South Atlantic States, 71 to 83; East Gulf States, 70 to 76; West Gulf States, 68 to 76; Lower Lake region, 66 to 73; Upper Lake region, 64 to 73; Ohio valley and Tennessee, 59 to 72; Upper Mississippi valley, 64 to 71; Lower Missouri valley, 65 to 71; Red River of the North valley, 57 to 75; Eastern Slope, from Dakota to interior of Texas, 52 to 65; Western Plateau, 25 to 40; California, 37 to 79. High stations report the following: Mt. Washington, 91; Pikes Peak, 55; Cheyenne, 59; Denver, 50; Santa Fe, 48; Virginia City, 45.

WINDS.

The prevailing winds at Signal Service stations are shown by arrows, flying with the wind, on chart No. II. West of the Mississippi the prevailing direction is southeasterly and southerly; along the Atlantic coast, southwesterly, and over the Ohio valley and Lake region, variable. The maximum velocities have already appeared under the description of storm-areas.

Total Movements of the Air.—The following are the largest monthly movements of the air as recorded at the Signal Service stations, viz.:—Mt. Washington, 16,408 miles; Cape Lookout, 11,556; Portsmouth, N. C., 9,266; Cape Hatteras, 9,013; San Francisco, 8,780; Dodge City, 8,664; Stockton, Texas, 8,418; Smithville, N. C., 7,644; Cape May, 7,334; Sandy Hook, 7,267; Cape Henry, 7,123; Pike's Peak, 6,157; The smallest are:—La Messilla, N. M., 936 miles; Knoxville, 1,209; Visalia, Cal., 1,343; Montgomery.